**Remarks/Arguments:**

This is a reply to the office action of May 23, 2007.

The examiner rejection claims 11 - 17 and 20 - 24 under 35 U.S.C. §112 on the ground that the specification does not define "diblock fraction" or how it is measured.

We have amended the claims by replacing each instance of "diblock fraction" with "diblock content", which is the term more commonly used in the U.S., although "diblock fraction" is sometimes used. The German "anteil" in the original application supports both translations.

The technical meaning of the diblock content is very well known to people of ordinary skill in the art. It means that portion of a block copolymer which is formed of only two blocks. As evidence of industry use of the phrase, we attach selected pages from websites of polymer manufacturers, concerning the polymers KRATON™ D-1119P, Zeon Quintac 3520 (these polymers are also explicitly taught as suitable examples in the application as filed (cf. paragraph [0013]) and Europrene® Sol T 190.

From the data sheets and from the patents listed below, it is evident that it is common in the art to refer to the diblock content (in percent) of block copolymers and to claim the diblock content as a characteristic of a composition. The ordinarily skilled person does not need any further information to understand "diblock content", i.e., he does not need a definition of what diblock content is, or exactly how it is determined or measured. The person skilled in the art could to carry out the invention and would know what the metes and bounds of claim 11 are. We submit that the phrase "diblock content" is sufficiently well known that additional description is not required and thus, the requirements of 35 U.S.C.§ 112 have been fulfilled by the present specification and claims.

We have found 73 U.S. Patents which mention "diblock content"; 23 of those, listed below, recite "diblock content" in the claims:

| | | | |
|---|---|---|---|
| 7,230,041 | 6,486,229 | 6,025,071 | 5,854,335 |
| 6,692,805 | 6,433,069 | 5,994,476 | 5,798,401 |
| 6,657,000 | 6,384,138 | 5,948,527 | 5,750,607 |
| 6,582,829 | 6,197,845 | 5,912,295 | 5,271,999 |
| 6,531,544 | 6,184,285 | 5,869,562 | 5,242,984 |
| 6,508,875 | 6,120,913 | 5,869,555 | |

The attached abstract of a 1971 article published in the Journal of Applied Polymer Science also shows that it has been known for some time how to determine diblock content. According to the abstract, the diblock content of commercial triblock polmyers such as "kraton" (as in the present application) can be determined by gel permeation chromatography and small-angle x-ray scattering.

35 U.S.C. §102 (Claims 11 - 13, 16 - 17, 20 - 24)

The examiner has withdrawn the rejection under 35 U.S.C. §103(a) in view of Wang, but has rejected the same claims under 35 U.S.C. §102(b), over the same reference. This rejection is respectfully traversed, inasmuch as the claim 11 requires a diblock fraction of more than 40 percent. As the Examiner correctly notes, Wang fails to disclose a block copolymer with the specific feature of the high diblock content, as set forth in claim 11. The present invention is thus not anticipated by Wang.

Moreover, we submit that claim 11 is not obvious over Wang. Wang teaches compositions that serve a diametrically opposed purpose: while Wang aims to provide a water-sensitive adhesive composition (cf. abstract), the present invention provides an adhesive with improved wet-peel strength (abstract). Table 1 of the present application clearly shows that this goal is in fact achieved, due to the diblock content specified.

There is nothing in the references of record that would motivate a person of routine skill in the art to reverse the teaching of Wang – with respect to the goal to be achieved – by using the diblock content specified in claim 11. The remaining claims depend ultimately from claim 11 and are deemed non-obvious as well for the subject matter they inherit from claim 11.

The rejection of claims 14 and 15 as obvious over Wang alone is respectfully traversed for reasons already discussed with respect to parent claim 11.

We therefore submit that the claims now presented are not obvious from Wang, and that this application is in proper form for allowance.

Respectfully submitted,

/Charles Fallow/

Charles W. Fallow
Reg. No. 28,946

Shoemaker and Mattare, Ltd.
10 Post Office Road - Suite 100
Silver Spring, Maryland 20910

August 28, 2007

| Product Information - D-1119P | |
|---|---|
| **Name** | D-1119P |
| **Description** | KRATON™ D-1119P Polymer is a styrenic/isoprene block copolymer that consists of approximately 34% SIS block copolymer and 66% diblock (SI) polymer. Overall, the block copolymer contains 22% weight styrene. When properly formulated, KRATON™ D-1119P Polymer provides lower viscosity and higher tack adhesives than other conventional SIS block copolymers. In fact, KRATON™ D-1119P is designed to give a good balance of strength, tack, and easy processability, which is very important in pressure-sensitive adhesive application. |
| **Polymer Type** | SIS Linear |
| **Region** | North America |
| **Polystyrene Content** (in % mass) | 22 |
| **Hardness** (Shore A, 30s) | 30 |
| **Solution Viscosity** (in Pa.s at 25% mass in toluene at 25°C) | 0.34 |
| Melt Flow Weight (g/10min) | 25 |

Shell Chemicals

# KRATON* POLYMERS

## For use in Adhesives, Sealants and Coatings

KRATON Polymers

### Kraton D - SIS. Summary of properties. These are typical values and should not be used to set specifications

| Grade[1] | D-1107 | D-1111 | D-1112 | D-1113 | D-1117 | D-1119 | D-1124 | D-1160 | D-1161 | D-1163 | D-1165 | D-1193X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belpre, USA[2] | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ● |
| Berre, France[2] | ○ | ○ | | | | | | | | | | |
| Kashima, Japan[2] | ● | | ● | | | | | ○ | ● | ● | ○ | |
| Paulinia, Brazil[2] | | | | | | | | ● | ● | ○ | ○ | |
| Pernis, The Netherlands[2] | | | | | | | | ● | ● | ● | ● | |
| Wesseling, Germany[2] | ● | ○ | | | | | | ○ | ○ | ○ | ○ | |
| Type | Linear SIS/SI | Linear SIS/SI | Linear SIS/SI | Linear SIS/SI | Linear SIS/SI | Linear SIS/SI | Branched $(SI)_n$/SI | Linear SIS | Linear SIS/SI | Linear SIS/SI | Linear SIS/SI | Linear SIS/SI |
| Polystyrene Content (%) | 15 | 22 | 15 | 16 | 17 | 22 | 30 | 19 | 15 | 15 | 30 | 24 |
| Diblock Content (%) | 17 | 15 | 38 | 56 | 33 | 66 | 29 | 0 | 19 | 38 | 19 | 20 |
| Solution Viscosity (Pa.s)[3] | 1.60 | 1.20 | 0.90 | 0.69 | 0.47 | 0.34 | 0.34 | 1.00 | 1.20 | 0.90 | 0.34 | 0.40 |
| Melt Flow Rate (g/10 min)[4] | 9 | 2* | 23 | 16 | 33 | 25 | 4 | 9 | 12 | 16 | 6 | 13 |
| Tensile Strength (MPa)[5] | 28 | 28 | 10* | 4* | 8* | - | - | 32 | 28 | 17 | 21 | - |
| 300% Modulus (MPa)[5] | 0.9 | 1.8 | 0.5* | 0.3* | 0.4* | - | - | 1.9 | 0.9 | 0.7 | 2.7 | - |
| Elongation at Break (%)[5] | 1300 | 1200 | 1400* | 1500* | 1300* | - | - | 1300 | 1300 | 1400 | 1200 | - |
| Hardness, Shore A | 37 | 52 | 34 | - | 32 | - | - | 52 | 37 | 34 | 65 | - |
| Physical Form | Dense Pellet, Porous Pellet, Milled Powder | Porous Pellet | Dense Pellet | Dense Pellet | Dense Pellet | Dense Pellet | Dense Pellet | Porous Pellet | Porous Pellet, Milled Powder | Porous Pellet, Milled Powder | Porous Pellet | Dense Pellet |

* KRATON is a Shell trade mark

Version 4, 5/17/99

| Grade | | | Quintac 3620 | Quintac 3421 | Quintac 3433N | Quintac 3520 | Quintac 3450 | Quintac 3460 |
|---|---|---|---|---|---|---|---|---|
| Properties | | | | | | | | |
| Polymer Structure | 1) | | H | L | L | L | R | R |
| Styrene Content | 2) | [%] | 14 | 14 | 16 | 15 | 19 | 25 |
| Mw | 3) | $\times 10^3$ | 230 | 200 | 170 | 200 | 200 | 180 |
| SI Diblock Content | 3) | [%] | 12 | 26 | 56 | 78 | 30 | 42 |
| Solution Viscosity | 4) | [Pa•s] | 1.50 | 1.30 | 0.81 | 1.10 | 0.49 | 0.38 |
| Melt Viscosity | 5) | [Pa•s] | 600 | 550 | 500 | 670 | 240 | 250 |
| Melt Index | 6) | [g/10min.] | 9 | 10 | 12 | 7 | 16 | 11 |
| Hardness | 7) | [Shore A] | 42 | 36 | 34 | 35 | 44 | 55 |
| 300% Modulus | 8) | [MPa] | 1.0 | 0.7 | 0.4 | 0.4 | 1.5 | 1.8 |
| Tensile Strength | 8) | [MPa] | 14 | 14 | 6 | 3 | 7 | 6 |
| Elongation | 8) | [%] | 1300 | 1400 | 1500 | 2000 | 1100 | 960 |

1) L: Linear R: Radial H: Hybrid (mixture of linear and radial polymer)
2) Abbe's refractometer
3) Converted by Gel Permeation Chromatography
4) Brookfield Viscometer (25wt.% solids toluene solution, at 25 °C)
5) Flowtester (Load:100kgf/cm$^2$, dimension of the die:1mm$\phi$×10mm, at 180 °C)
6) ASTM D-1238 (G condition)
7) ASTM D-2240
8) ASTM D-638 (modified)

FDA Status: Quintac is manufactured to meet the specification and requirements set forth FDA regulation of title 21, section 177. 1810.
CAS No. 25038-32-8

ZEON CHEMICALS

# Adhesive Properties of Quintac (Typical Values)

| Grade | | | Quintac 3620 | Quintac 3421 | Quintac 3433N | Quintac 3520 | Quintac 3450 | Quintac 3460 |
|---|---|---|---|---|---|---|---|---|
| Properties | | | | | | | | |
| Polymer Structure | | | H | L | L | L | R | R |
| Styrene Content | | [%] | 14 | 14 | 16 | 15 | 19 | 25 |
| Mw | | $\times 10^3$ | 230 | 200 | 170 | 200 | 200 | 180 |
| SI Diblock Content | | [%] | 12 | 26 | 56 | 78 | 30 | 42 |
| Tackiness | 1) | [cm] | 5.4 | 5.2 | 5.1 | 5.8 | 9.6 | 11.2 |
| Peel Adhesion | 2) | [N/m] | 680 | 700 | 860 | 1300 | 620 | 760 |
| Holding Power | 3) | [min.] | 1500 | 950 | 1000 | 230 | 2900 | 5000 |
| Carton Sealability | 4) | [min.] | 500 | 500 | 1600 | > 3000 | 420 | 1600 |
| SAFT | 5) | [°C] | 72.0 | 70.0 | 75.2 | 73.0 | 78.5 | 89.5 |

1) PSTC-6 Rolling Ball (at 23 °C)
2) PSTC-1 180° Peel (to Steel, at 23 °C)
3) PSTC-7 (to Steel, 10×25mm, 1kg load, at 50 °C)
4) Zeon Method (500g load, at 23 °C)
5) Shear Adhesion Failure Temperature (to Steel, 10×25mm, 1kg load, temperature elevating rate: 0.5 °C/min.)

| Formulation: | | |
|---|---|---|
| SIS | | 100 |
| Tackifier 6) | (Quintone R100) | 100 |
| Plasticizer | (Shellflex 371N) | 20 |
| Antioxidant | (Irganox 1010) | 1 |

6) Aliphatic Hydrocarbon Resin, Softening Point: 96 °C

ZEON CHEMICALS

Precautions to be taken in handling and storing. Quintac Thermoplastic Rubbers can accumulate electrostatic charges during unloading and transport. Electrostatic charges may cause a flash fire when treated in presence of volatile or flammable materials. Ground all equipment, and pour the product slowly into chute or vessel under inert gas. Avoid storage in wet or sunny conditions. Avoid ignition sources. Refer to the Material Safety Data Sheet (MSDS) of a specific Quintac Thermoplastic Rubber product for further safety information.

* * *

The information contained herein is to the best of our knowledge accurate, but since the circumstances and conditions in which it may be used are beyond our control, we do not accept liability for any loss or damage, however arising, which results directly or indirectly from the use of such information, nor do we offer any warranty of immunity against patent infringement.

SEPTEMBER 2000

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ZEON CHEMICALS

POLIMERI EUROPA

# EUROPRENE ® SOL T 190

## TECHNICAL DATA SHEET

EUROPRENE SOL T 190 is a Styrene-Isoprene block copolymer designed for hot-melt pressure-sensitive adhesives applications, hot-melts and solvent based adhesives.
The polymer is supplied in pellet form.
A suitable antioxidant system has been added to the polymer.

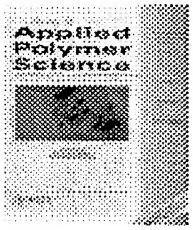
## COMPOSITION

| | |
|---|---|
| Molecolar structure | Linear |
| Styrene content | 16% by wt. |
| Isoprene content | 84% by wt. |
| Diblock content | 25% |
| Oil content | N/A |
| Antioxidant | Non Staining |

| PHYSICAL PROPERTIES | | TYPICAL VALUE | TEST METHOD |
|---|---|---|---|
| Specific gravity | g/cc | 0.915 | ASTM D 792 |
| Tensile Strenght (A) | Mpa | 12.0 | ASTM D 412 |
| 300% Modulus (A) | Mpa | 1.0 | ASTM D 412 |
| Elongation at Break (A) | % | 1200 | ASTM D 412 |
| Shore A Hardness (A) | | 30 | ASTM D 2240 |
| Melt Flow Index (B) | g/10 min | 9.0 | ASTM D 1238 |
| Physical Form | | White pellet | |

**(A)** ASTM D 2292 compression moulded specimens
**(B)** 5 kg. @ 190°C

Milan, January 2002



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Article

# The effect of diblock and homopolymer impurities on the morphology of triblock polymers

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## Abstract

Commercial triblock polymers (Kratons) consisting of polystyrene and a polydiene were characterized via gel permeation chromatography and small-angle x-ray scattering in order to determine the amount of free polystyrene and diblock material and to clarify the effect of these polymeric impurities on the morphology of solvent-cast samples. Gel permeation chromatography measurements revealed the Kratons to consist of 80-85% triblock, 15-20% diblock, and trace amounts of free polystyrene. Pure triblocks, impurity-doped pure triblocks, the Kratons, and a postpolymerically degraded Kraton were examined with regard to the effect of polymeric impurities on morphology. Small amounts (<5%) of free polystyrene induce a regularization of the glassy domains, while increased amounts of this homopolymer apparently lead to diffuse phase boundaries. The presence of diblock polymer results in a loss of macrolattice details, indicating the presence of less ordered and more diffuse glassy domains.

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